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METROPOLITAN LIFE INSURANCE COMPANY

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Accident Death Toll in Old Age

THE 7,500,000 persons who are 65 years of age or older in our country constitute only 6 percent of the total population; yet fully one quarter of the 100,000 annual accident fatalities in the United States are among persons who have passed their 65th birthday. Both on the score of the importance of accidents among this age group in the national total, and of the inordinate frequency of their occurrence, the special problem of accident prevention among old people is worthy of the most thorough study. As time goes on, furthermore, the problem will increase in national importance, for, as is well known, our population is aging, and as the years go by we shall have a continuously increasing proportion of our people in the older age ranges.

Many difficulties attend attempts to prevent accidents among the aged. A very large percentage of them occur in the home, and homemakers are notoriously hard to reach with the safety message. As for the old people themselves, they not infrequently resent advice. Safety education is not likely to be nearly as effective among the old people as it has been among children at school. Nor is there a great deal of information about accidents among the aged, such as would serve as a basis for planning an active prevention campaign. A few facts indicative of the broad aspects of the problem are, however, available.

Common experience would suggest, and very limited statistical data tend to support the view that the disproportionate number of fatal accidents among old people arises, not so much from the greater frequency of accidents among them, as from the fact that when an accident does occur the result is more likely to be serious. In old age bones break more easily, and when they break they do not knit as readily as in youth. Burns and other injuries do not heal as quickly. Serious complications, such as pneumonia, set in more frequently in the train of accidental injuries, and existing chronic disease, common among the aged, may be aggravated and brought to fatal termination.

The excessive accident mortality of the old is common to both men and women, being relatively greater

among the latter. Persons 65 years of age and older make up about 6 percent, not only of the total population, but also of each sex separately; against this essentially equal division between the two sexes, the fatal accidents are very unequally distributed, so that 18 percent of all male fatalities and 43 percent of all female fatalities fall into this age group. Not only is the relative proportion of accidental deaths at ages 65 and over, to total accidental deaths at all ages, higher among females, but, as is shown in the accompanying table, in the ages beyond 74 the actual death rate from accidents is higher among females. At all other ages throughout life, almost from birth to the age range 70–74 years, the male death rate from accidents is well in excess of the female. The table also shows the marked increase in the death rates per 100,000 population, with increasing age, for both males and females. Among males the rate ranged from 54.6 at ages under 15 years, to 842.6 at ages 80 and over. Among females the rate for ages under 15 (32.2) was higher than that for ages 15–44 (21.7), after which it rises rapidly to 1,168.9 per 100,000 at ages 80 and over.

Falls are by far the most frequent cause of accidental fatalities among old people and are responsible for about 15,000 such deaths each year in the United States. In the years 1934 to 1936, falls caused over 70 percent of the fatal injuries among females and 38 percent among males. For details regarding the particular kind of falls involved in these fatal accidents to old people, we can turn to the death records of persons insured in the Industrial Department of the Metropolitan Life Insurance Company. These records reveal that falls on floors, stairs, and on the street are the most common types among persons over 65. Relatively few of the deaths were due to falls from high places — balconies and porches, roofs, fire escapes, trees, scaffolds, and windows.

Automobiles each year kill in the neighborhood of 5,500 aged persons

Death Rates per 100,000 for Accidents (All Forms). By Sex and Specified Age Periods in the United States, 1934–1936

Age Period	Males	Females
All Ages	114.5	47.8
Under 15	54.6	32.2
15–44	101.3	21.7
45–64	159.3	44.3
65–69	243.9	127.1
70–74	296.5	220.3
75–79	425.7	443.1
80 and Over	842.6	1,168.9

—about two thirds of these deaths result from accidents in which vehicles strike pedestrians. The aged pedestrian is obviously at a great disadvantage against the fast starting and fast moving traffic of today.

The toll from accidental burns (excluding conflagrations) among persons 65 and over reaches 1,100 deaths each year. A large number of the fatalities resulting from burns are due to clothing catching fire at stoves and grates.

Deaths from illuminating gas poisoning, also, are relatively frequent in old age. It may be that older persons do not detect the odor of escaping gas as readily as younger persons; they are more forgetful and frequently fail to ignite the gas after turning it on. Then too, persons suffering from degenerative diseases are less likely to recover from c ɔon monoxide gas poisoning.

It is to be hoped that the effect of planned education in safe ways of living, given to our youth today, will carry through to their old age, so that the aged of the future will become more safety-conscious and better able to protect themselves; but probably a large share of the responsibility for protecting the aged will always fall upon those with whom they make their homes. A safe home is their greatest safeguard. In our home safety programs, the need for special care to eliminate hazards when old people are about should be emphasized. A little more regard on the part of the motorist for the difficulties experienced by the aged pedestrians in coping with modern traffic conditions, would materially aid in cutting down traffic deaths among old people. Here is a problem we would all do well to think about.

Restoring the Tuberculous Patient to Work

OUTSTANDING in the history of public health is the enormous improvement in the tuberculosis situation. With but few and unimportant interruptions, the trend of the death rate from this disease has been downward for decades. The current rate in the general population, of about 50 per 100,000, is a distinct landmark in the campaign and represents a decline of more than 70 percent in the last 30 years. A critical examination of the factors responsible for this improvement shows that preventive measures have been most effective. By our knowledge of how the disease is spread, we have been able to diminish the number of cases of tuberculosis developing among contacts of active cases. Another factor of great importance is the general improvement in the health of our population, with the result that individuals are better able to resist the disease. Higher living standards, better nutrition, better housing and education have all helped to bring this about. Improved care of tuberculous patients has also been a factor in the decline of tuberculosis, but surprising as it may seem, a relatively slight one.

Probably the greatest benefit that our tuberculosis sanatoria have rendered to public health is indirect, resulting from the removal of persons with active tuberculosis from the community and more particularly from the family circle. Another circumstance tending to diminish contacts is that, as shown by a recent investigation, under the auspices of the Milbank Fund, tuberculous parents have, on an average, smaller families than the nontuberculous.

Our organized facilities for detection and care of the tuberculous can and should have a greater direct influence on the downward trend of the disease, by increasing the percentage of recoveries from this serious disease. It is of the utmost importance, therefore, to see that the factors which influence recovery are as favorable as possible for the patient. That a definite program of early detection and adequate treatment is highly effective is demonstrated by the experience of the Metropolitan Life Insurance Company among those of its personnel who have developed pulmonary tuberculosis and have been treated at the Company's Sanatorium at Mount McGregor.

The first essential of early detection is a systematic program to discover persons with the disease. At the Metropolitan this program is based upon medical examination of applicants for employment at the Home and Head Offices of the Company and of its Field representatives, and the periodic reexamination, annually or oftener, of those in the service of the Company. At the Home and Head Offices, furthermore, fluoroscopic examination of the chest is made as part of the annual examination, and after illnesses, particularly respiratory disease and repeated colds. This technique has proved highly effective in discovering cases with abnormal chest findings for whom roentgenograms are advisable.

As a result of this case-finding program, most of the persons connected with the Company who have developed tuberculosis have been detected before the disease has become advanced. This is particularly true of the Home Office personnel since 1928, when routine fluoroscopy was instituted. In that group a high percentage of those developing tuberculosis have been detected before there were any clinical signs or symptoms of the disease or any appreciable loss of weight. Moreover, the incidence of new cases of the disease has definitely declined, both among Home Office employees and Field representatives, although the incidence of the disease among applicants for employment at the Home Office, who are drawn pretty much from the same population as those actually employed, showed no significant change. The decline in the appearance of new cases of the disease in the last ten years at the Home Office is nearly 80 percent. Even with this large decrease in the total of new cases from the Home Office, those with minimal tuberculosis on admission to the Sanatorium

comprised 59 percent of the total during 1930–1938; 36 percent were moderately advanced and only 5 percent were far advanced. In contrast, fairly recent data for the sanatoria in the country as a whole showed that only 13 percent were admitted in the minimal stage, 30 percent were moderately advanced and 57 percent far advanced.

Adequate sanatorium care is the second essential in permanent rehabilitation of the tuberculous. To meet that requirement the Company aims to keep patients at its Sanatorium until they are ready to resume work. This objective cannot always be attained because a fairly large number of patients, for various reasons, leave the Sanatorium before they complete their cure. Most of these patients feel well, but cannot by accepted clinical standards be called arrested. A few also who are not doing well want to spend their last days with their families. Yet, of the 1,069 patients first admitted for treatment of tuberculosis between 1919 and 1936, and discharged by the end of 1936, 55.2 percent were in a satisfactory* condition at discharge. Those discharged as improved accounted for 23.2 percent of the total; 13.9 percent were discharged unimproved; and 7.7 percent died at the Sanatorium. Quite different are country-wide sanatorium figures which showed only 17.2 percent arrested or apparently arrested, 11.6 percent quiescent, 30.1 percent improved, 17.2 percent unimproved, and 23.9 percent dead.

The effect of early detection on the results obtained at the Company's Sanatorium is distinct. Of those admitted with minimal tuberculosis, 71.5 percent were discharged in a satisfactory condition, as compared with 51.5 percent of the moderately advanced and 32.9 percent of the far advanced. Furthermore, only 1.1 percent in the minimal group died at the Sanatorium, as compared with 6.7 percent in the moderately advanced group and 22.8 percent in the far advanced group.

The excellent results obtained at the Sanatorium are paralleled by the record subsequent to discharge. Of those patients discharged alive who were out at least five years at the anniversary of discharge in 1937, 61.7 percent were at work or able to work on the fifth anniversary of discharge. Of the remainder, 18.3 percent were unable to work, usually because of relapse, a few had retired because of age, 3.0 percent were known to be living but their ability to work was unknown, and 15.7 percent had died. Only a few patients were untraced.

Most remarkable are the long-term results with those patients who exemplified both early detection and adequate treatment. Of this group consisting of those with minimal tuberculosis on admission who were discharged in satisfactory condition, over 80 percent were at work or able to work five years after discharge,

*Arrested, apparently arrested, or quiescent. Those quiescent at discharge from the Company's Sanatorium are included because only 9 of the 250 patients in this group had a positive sputum at discharge. This is a much lower percentage than at most other sanatoria.

only 10 percent were unable to work and 3½ percent had died. The mortality of this large group of people was only slightly higher than normal. These figures are in marked contrast to those with far advanced tuberculosis who were in unsatisfactory condition at discharge. Of this group, less than one fourth were able to work on the fifth anniversary of their discharge, about one half had died and most of the others were ill or unable to work.

These results clearly prove the value of early detection and of keeping patients under treatment until the disease is arrested. As we have seen, the percentage of patients admitted to most sanatoria with tuberculosis already advanced is high and, consequently, the results are unsatisfactory. The period of stay required to effect cure is much prolonged. In many parts of the country the facilities for treatment of the tuberculous are wholly inadequate, and as a result relatively few patients are admitted to sanatoria until the prospects for permanent recovery are relatively poor. In the meantime, many persons with active tuberculosis are at large in the community spreading infection to others. It is apparent that the cost of providing adequate care for these patients is more than offset by the savings which would accrue from restoring these people to health and activity, preventing new cases of the disease and decreasing the burden of costs resulting from the premature death from tuberculosis of thousands of breadwinners in the population each year. It is hoped that the publication of this experience will act as a spur to the provision of the needed facilities for the early detection and care of the tuberculous in our country. This step may be counted on to bring a further substantial reduction in the mortality from the disease. In fact, strengthening this weakest link in the chain which comprises the modern campaign against tuberculosis may well be the one needed step toward bringing tuberculosis effectively under control.

War and International Mortality Trends

For a series of years we, here in the United States, have been experiencing a continuous improvement in mortality, with 1938 a record health year. This has not been an isolated phenomenon, peculiar to our country; much the same trend has been observed in many other lands. And now a great war has broken out with the very real threat of higher mortality not only in the belligerent countries but possibly for all the world.

At such a time it is natural to review the past and look into the future, with the lessons of the past in one's mind. First, as to the recent trend. An examination of the changes in death rates experienced by 23 European countries and four countries outside of Europe, for which data are available for the

decade ending in 1938, reveals only three instances of increasing mortality, from the earlier to the later half of the decade. In fact, of the warring European nations, only one, Germany, showed an increase. Poland, hardest hit so far in the present war, showed a decrease from 15.4 per 1,000 in the first five-year period of the decade to 14.1 in the second, an improvement of 8.4 percent. Poland is one of the eight countries on the list for which 1938 was a year of record low death rate. England and Wales improved by 3.3 percent, France by 6.1 percent. Neither established a new record in 1938. These and further figures will be found exhibited in the accompanying table.

Compared to other countries listed in this table, the United States makes a very creditable showing, with its record low of 10.6 per 1,000 in 1938. Only six countries experienced lower death rates than ours in 1938 — namely, Canada, Denmark, the Netherlands, Norway, Australia, and New Zealand. Denmark alone, of all these countries with death rates lower than that of the United States, reached its minimum mortality in 1938. Among the countries that did not equal our standard, Scotland and Northern Ireland also found 1938 to be their record year of low mortality.

For 11 of the countries in the table the decreases in the death rates from the first to the second five-year period ranged from 5 to 10 percent; 10 countries had decreases of less than 5 percent. In the latter group are many of the countries which were already experiencing low death rates in the period 1929 to 1933, so that the relatively small improvements noted in these instances is not particularly surprising. Into the last category falls the United States, with average death rates of 11.2 and 11.0 for the respective periods, 1929 to 1933 and 1934 to 1938; the improvement amounts to 1.8 percent.

In Australia and New Zealand—both of which are noted for their favorable mortality — there has been an upward trend in the death rates in recent years. From a minimum death rate of 8.6 per 1,000 in 1930, Australia experienced a rise to a high point of 9.6 in 1938. Similarly, New Zealand's death rate rose quite consistently from a low of 8.0 per 1,000 in 1933 to a level of 9.7 in 1938. A part of the upswing in mortality in these countries may be attributed to the aging of their populations, with the consequent influence of larger proportions of older persons upon the crude death rates. Germany, the only one of the European warring countries to show an increase in the death rate during the last decade may, to some extent, be influenced both by an increasing proportion of older persons and also by an increasing proportion of infants resulting from the recent sharp upturn in the birth rate.

It is a sad reflection that a break must now be expected in some of the hitherto favorable trends of international death rates. Unfortunately, added to the direct harvest

of death on the battlefield there is, in every war, additional heavy toll from diseases associated with the hardships to which both the military and the civil population are exposed. Among our own forces in the World War the number of those killed in battle or dying from wounds was about 53,400, a figure considerably exceeded, however, by deaths from disease, which has been somewhat variously reported as between 58,000 and 63,000. This includes deaths in the soldiers' camps here in the United States during demobilization, when the great influenza epidemic was at its height. Figures for deaths by disease in the total contending armies of the last World War cannot be obtained with any accuracy. Through the modern advances of medicine, it was possible to maintain a lower level of mortality from disease in that war than in all previous campaigns. So, for example, the inoculation against typhoid fever undoubtedly must have prevented a very large number

Death Rates per 1,000 in Certain Countries in the Periods 1929 to 1933 and 1934 to 1938, and in the Year 1938

Country	Death Rate per 1,000			Percent Change 1929-33 to 1934-38
	1938	1934-1938	1929-1933	
United States	10.6*	11.0	11.2	— 1.8
Australia	9.6	9.4	8.9	+ 5.6
Austria	14.0	13.4	13.8	— 2.9
Belgium	13.0	12.8	13.6	— 5.9
Bulgaria	13.4*	13.9	16.6	—16.3
Canada	9.5	9.7	10.3	— 5.8
Czechoslovakia	13.5	13.4	14.4	— 6.9
Denmark	10.3*	10.7	11.0	— 2.7
Eire	13.6	14.1	14.4	— 2.1
England and Wales	11.6	11.9	12.3	— 3.3
Estonia	14.5	14.8	15.7	— 5.7
Finland	12.9	12.7	13.4	— 5.2
France	15.4	15.3	16.3	— 6.1
Germany	11.7	11.6	11.4	+ 1.8
Hungary	14.3	14.5	16.5	—12.1
Italy	13.9	13.8	14.8	— 6.8
Lithuania	12.6*	13.5	15.5	—12.9
Netherlands	8.5	8.6	9.4	— 8.5
New Zealand	9.7	8.9	8.3	+ 7.2
Northern Ireland	13.7*	14.3	14.6	— 2.1
Norway	10.0	10.2	10.8	— 5.6
Poland	13.8*	14.1	15.4	— 8.4
Portugal	15.5*	16.3	17.3	— 5.8
Roumania	19.2	20.0	20.4	— 2.0
Scotland	12.6*	13.2	13.6	— 2.9
Sweden	11.5	11.7	11.8	— .8
Switzerland	11.6	11.5	11.9	— 3.4

*Lowest on record.

of deaths, as is clear from our experience in the Spanish-American War, when deaths from typhoid fever outnumbered those in battle 10 to 1. Our losses from this cause in the World War, when anti-typhoid inoculation was compulsory in the armed forces, were negligible in comparison with the number of men engaged. Even at best, however, making all allowance for the great advances of modern medicine, deaths from disease will inevitably run very high among the armed forces during any war, and will, furthermore, be seriously increased among the civilian population, living and working under handicaps imposed by a state of war. One of the serious consequences of the last World War was a material increase in the death rate from tuberculosis.

Unfortunately, too, civilians are never wholly exempt from the direct impact of military operations, though promises have been made of moderation during the present struggle. All in all, it is a foregone conclusion that the excellent record of diminishing death rates that has characterized the last few decades will suffer a serious setback in the warring countries during the current and impending struggle, even if we are spared so devastating a visitation as the influenza pandemic of 1918-1919.

Our World's Fairs Exhibits

THE Metropolitan Life Insurance Company cordially invites readers of the STATISTICAL BULLETIN to attend its exhibits in the Business Systems and Insurance Building, New York World's Fair, and in the Hall of Science, Golden Gate International Exposition, San Francisco, Calif.

Health Record for August 1939

AUGUST of this year, like June and July, has the distinction of registering the lowest mortality rate on record for this particular period of the year among the millions of wage-earners and their dependents who are Industrial policyholders of the Metropolitan Life Insurance Company. The death rate for August 1939 was 697.1 per 100,000—which is just under the previous low for that month (702.0). This

year's August death rate among about 1,250,000 of the insured in Canada (506.6 per 100,000) is also a new low for that month in the Dominion.

As the result of the exceedingly low mortality rates of the last three months, the cumulative mortality rate for the eight elapsed months of the current year is now only 1.3 percent above that for the like part of 1938, the record year of all time for low mortality.

The following causes of death, 10 in number, which registered lower mortality rates in 1938 than ever before, will in all probability show still further improvement for the full year 1939: Scarlet fever, diphtheria, pneumonia, tuberculosis, diarrheal diseases, appendicitis, chronic nephritis, puerperal conditions, homicides, and accidents.

In the general population of the 88 major American cities the August mortality record was excellent, with deaths falling well below the total during the same month of last year, and well under the average for August during the previous three years. The incidence of measles, scarlet fever, smallpox and whooping cough was lower than that reported in either the previous month of July or in August of last year. While there was more sickness from diphtheria, influenza, and typhoid fever than in July, cases of these diseases were appreciably fewer than reported in August 1938. Poliomyelitis was the only important communicable disease which showed higher prevalence in August of the current year than in either the preceding month of July or in August of last year. Cases of this disease reported by 47 States and the District of Columbia increased from 541 in July to 1,205 in August. Cases of poliomyelitis have not been confined to any particular part of the country. There have been, for example, marked increases in August as compared with July in New York, Michigan, Minnesota, and California.

Among the items of special health interest recently reported are the following: New York University, with the cooperation of the College of Engineering and the Division of General Education, will include a 15-week symposium on industrial accident prevention in its program this fall. At the request of the Surgeon General of the United States Public Health Service, a resurvey is being planned in Chicago to determine the effectiveness of efforts toward the control of venereal diseases. The Pennsylvania State Department of Health and the Medical Society of the State have started a campaign against cancer. Physicians have been asked to send in a complete record of every patient they treat for any kind of tumor, whether benign or cancerous. It was recently announced by the United States Public Health Service that the National Cancer Institute will make a loan of 8.5 gm. of radium to hospitals in 20 States and the Territory of Hawaii.

The following table shows the mortality among Industrial policyholders for August 1939, July 1939, and August 1938, together with the death rates for the first eight months of each year.

METROPOLITAN LIFE INSURANCE COMPANY

Death Rate per 100,000 for Principal Causes. Weekly Premium-Paying Business in Industrial Department. All Ages (Annual Basis).*

MONTHS OF AUGUST 1939, JULY 1939, AND AUGUST 1938

CAUSES OF DEATH	ANNUAL RATE PER 100,000 LIVES EXPOSED*				
	August 1939	July 1939	August 1938	Cumulative January-August 1939	Cumulative January-August 1938
TOTAL—ALL CAUSES	697.1	690.5	702.0	796.3	786.4
Typhoid fever	.9	1.1	1.5	.6	.9
Measles	.1	.6	.1	.8	2.3
Scarlet fever	.3	.1	.3	.8	1.4
Whooping cough	1.5	1.1	1.9	1.8	2.1
Diphtheria	.9	.4	1.0	1.1	1.5
Influenza	1.7	2.1	2.0	12.3	8.0
Pneumonia (all forms)	17.5	19.0	25.1	49.7	56.3
Tuberculosis (all forms)	40.2	42.9	43.8	45.6	47.9
Tuberculosis of respiratory system	35.7	39.2	39.5	40.9	42.8
Syphilis, locomotor ataxia, and general paralysis of the insane	9.0	9.6	10.6	10.9	11.2
Cancer (all forms)	97.7	96.0	95.7	98.8	95.7
Diabetes mellitus	24.4	24.3	19.5	27.6	24.7
Cerebral hemorrhage; apoplexy	54.4	51.6	52.6	60.8	58.7
Diseases of the heart†	133.5	137.8	128.6	164.0	154.1
Diseases of the coronary arteries	34.7	32.9	31.5	39.8	33.6
Angina pectoris	4.6	5.4	4.4	6.5	6.8
Diarrhea and enteritis	7.6	6.2	10.5	5.1	6.8
Appendicitis	12.1	10.0	10.8	10.2	10.4
Chronic nephritis (Bright's disease)	44.0	42.6	47.1	52.1	54.1
Puerperal state—total	6.0	5.0	6.0	5.6	6.1
Suicides	9.0	7.6	9.3	8.6	9.2
Homicides	4.3	4.3	4.6	4.3	4.3
Accidents—total	50.3	51.6	55.2	45.9	47.7
Automobile accidents	17.4	14.6	18.5	15.7	16.7
All other diseases and conditions	142.4	138.3	139.8	143.3	142.6

*The rates for 1939 are subject to slight correction, since they are based on provisional estimates of lives exposed to risk.

†Excludes pericarditis, acute endocarditis, acute myocarditis, coronary artery diseases, and angina pectoris.

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STATISTICAL BULLETIN,

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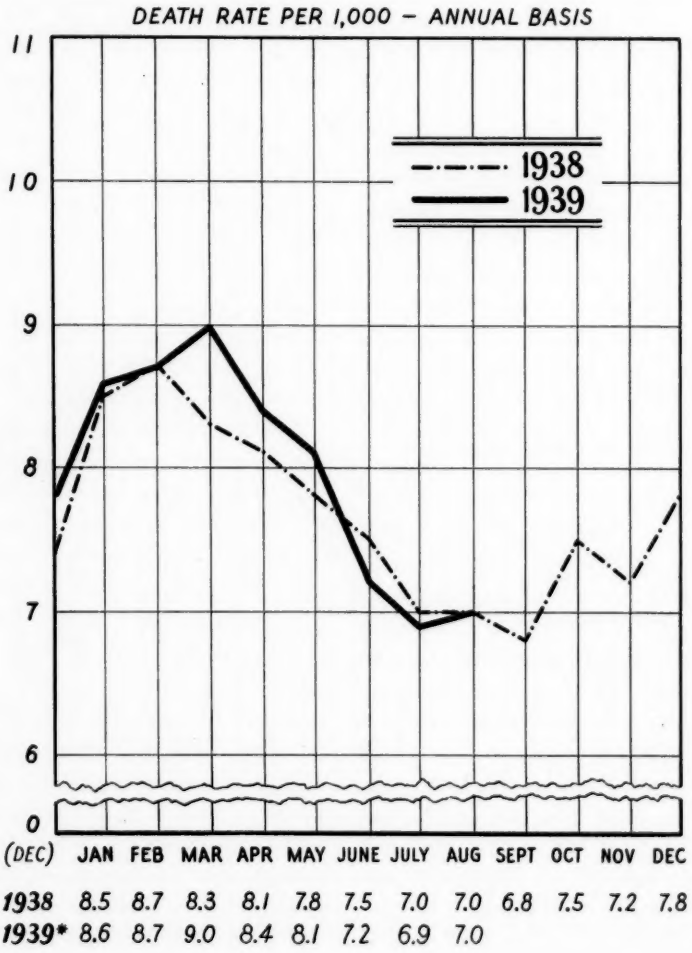
DEATH RATES FROM ALL CAUSES

METROPOLITAN LIFE INSURANCE COMPANY
INDUSTRIAL DEPARTMENT
WEEKLY PREMIUM-PAYING BUSINESS – TOTAL PERSONS



*Rates are provisional

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